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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/500,961	07/08/2004	Minoru Ohara	2004-0942A	3412
513 7590 03/07/2008 WENDEROTH, LIND & PONACK, L.L.P. 2033 K STREET N. W. SUITE 800 WASHINGTON, DC 20006-1021				
EXAMINER BAREFORD, KATHERINE A				
ART UNIT 1792		PAPER NUMBER		
MAIL DATE 03/07/2008		DELIVERY MODE PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/500,961

**Applicant(s)**

OHARA, MINORU

**Examiner**

Katherine A. Bareford

**Art Unit**

1792

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 31 January 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-72 is/are pending in the application.
- 4a) Of the above claim(s) 3-6, 12-17, 19-22, 24-27, 29-32, 34-37 and 39-72 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 2, 7-11, 18, 23, 28, 33 and 38 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 July 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 7/04, 9/07
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

#### DETAILED ACTION

1. The preliminary amendment of July 8, 2004 has been received and entered. With the entry of the amendment, claims 1-72 are pending.

#### *Election/Restrictions*

2. Applicant's election without traverse of Group I, claims 1, 2, 7-12, 18, 23, 28, 33, 38 and 43, and Species A, leaving claims 1-2, 7-11, 18, 23, 28, 33 and 38 reading on the elected species, in the reply filed on January 31, 2008 is acknowledged.

3. Claims 3-6, 12-17, 19-22, 24-27, 29-32, 34-37 and 39-72 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to nonelected inventions and species, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on January 31, 2008.

#### *Information Disclosure Statement*

4. The information disclosure statement filed July 8, 2004 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each cited foreign patent document; each non-patent literature publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but the information referred to therein has not been considered.

WO 94/09079 has not been considered as no copy was provided.

***Specification***

5. The abstract of the disclosure is objected to because two different abstracts were filed on July 8, 2004, and it is confusing what is intended.

Correction is required. See MPEP § 608.01(b).

***Claim Objections***

6. Claims 7-11, 18, 23, 28, 33 and 38 are objected to because of the following informalities: claims 7-11 each begin with the phrase "Any of the thermal barrier coating methods described as claim 1" and claims 18, 23, 28, 33 and 38 each begin with the phrase "Any of the thermal barrier coating methods described as claim 2". This phrasing is incorrect as "claim 1" and "claim 2" are directed to single coating methods. A more correct phrase would be "The coating method of claim 1", etc.

Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 7, 9, 18 and 28 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 7, line 2, claims that "said cooling holes are not drilled through or drilled through". This is confusing as worded because (1) it is unclear when the cooling holes would be drilled through – before coating, after coating, etc. and (2) "not drilled through or drilled through" is confusing if it is meant that the holes can be "drilled through" or "not drilled through" (two different states) or whether "drilled through" was just repeated twice and the holes are always "not drilled through". For the purpose of examination, the Examiner has treated the claim as meaning that holes can be drilled or not drilled and that the timing can occur anywhere in the process, i.e. "not drilled through before coating" or "not drilled through after coating", for example.

Claim 9, line 3-5, "superior" in blasting resistant, heat resistance, adherence, wetness, etc. is confusing as worded as to what is required, because "superior" is a relative term which renders the claim indefinite. The term "superior" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

Claim 18, line 2, claims that "said cooling holes are not drilled through or drilled through". This is confusing as worded because (1) it is unclear when the cooling holes would be drilled through – before coating, after coating, etc. and (2) "not drilled

through or drilled through" is confusing if it is meant that the holes can be "drilled through" or "not drilled through" (two different states) or whether "drilled through" was just repeated twice and the holes are always "not drilled through". For the purpose of examination, the Examiner has treated the claim as meaning that holes can be drilled or not drilled and that the timing can occur anywhere in the process, i.e. "not drilled through before coating" or "not drilled through after coating", for example.

Claim 28, line 2-6, "superior" in blasting resistant, heat resistance, adherence, wetness, etc. is confusing as worded as to what is required, because "superior" is a relative term which renders the claim indefinite. The term "superior" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

#### *Claim Rejections - 35 USC § 102*

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. Claims 1, 2, 7, 10, 18 and 33 are rejected under 35 U.S.C. 102(b) as being anticipated by Clingman et al (US 5130163).

Claims 1-2: Clingman teaches a method of forming a thermal barrier coating by spray coating over a surface of a component. Column 1, lines 35-60. The component has cooling holes (perforations) made in it. Figure 2 and column 2, lines 15-50 (see perforations 22, for example). A masking process where masking plugs (pins) are inserted into the cooling holes is provided. Column 2, lines 55 through column 3, line 20. The masking process includes forming the plugs so that they do not protrude above the surface of the component. Column 3, lines 1-11 and figure 4. Then blasting treatment process is provided where the surface of the component is blasted and coarsened (roughened) to prepare the surface for coating. Column 3, lines 20-30. Then a spray coating process is provided where a thermal barrier coating is formed by spray coating over the surface of the coarsened component. Column 3, lines 30-65 and column 1, lines 35-45.

Claims 7, 18: the cooling holes are not “drilled through” as the holes do not extend all the way through the component, for example. Column 2, lines 15-50 and figure 2 (shrouded side perforations 18 are offset relative to perforations 22). As well, drilling through does not occur after coating, as the plugs are removed by thermal/chemical treatment or chemical treatment rather than drilling. Column 4, lines 25-60.

Claims 10 and 33: the masking plug can be composed of silicone rubber. Column 2, lines 60-65. The rubber would be “elastic” as it is described as “elastomeric”. Column 3, lines 10-20.

*Claim Rejections - 35 USC § 103*

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 9 and 28 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Clingman et al (US 5130163).

As discussed in the 35 USC 102(b) rejection above, Clingman teaches all the features of parent claims 1-2. As to the features of claims 9 and 28:

(A) As to the 35 USC 102(b) rejection, Clingman teaches that the material of the masking pin is elastic and resistant to blasting (column 3, lines 25-30), is resistant to the heat caused by the spray coating (as the plug remains after thermal spray coating and must be removed, column 4, lines 25-35), has stripping easiness as it can be entirely removed after coating (as the plug is stripped out, and as the air flow remains the same after the treatment, column 5, lines 1-10), and as to adherence and wetness to prevent thermal barrier coating material from accumulation, teaches that the bond coat and top coat do not readily adhere to the plug material and almost all particles do not adhere (column 3, lines 45-55 and column 4, lines 1-6). Given the confusion as to what is



required by "superior" as discussed in regard to the 35 USC 112 rejection of these claims above, it appears that Clingman provides a "superior" coating material to the extent claimed, because the benefits of the of the material are provided.

(B) As to the 35 USC 103(a) rejection, Clingman teaches the features of the masking pin material as discussed in (A) above, and while Clingman does not specifically teach that the material is "superior", Clingman notes that desire for all the beneficial features claimed, and when providing a material to provide desired features, one of ordinary skill in the art would be suggested to optimize a material to achieve the best possible desired results, as "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).

13. Claims 8 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Clingman as applied to claims 1, 2, 7, 10, 18 and 33 above, and further in view of the admitted state of the prior art.

Clingman teaches all the features of these claims except that the component is specifically a combustion transition piece. Clingman does teach that the component is to be used in a gas turbine engine combustor, for example. Column 2, lines 20-25. The cooling holes and the coating can be provided in an internal periphery surface of the

component. Column 1, lines 35-60 and column 2, lines 30-35 (the inside lamina 12 is the exposed surface to be treated).

The admitted state of the prior art, at pages 1-3 of the specification, teaches that combustion transition pieces (103) are well known parts of a combustor in a gas turbine with cooling holes which are to be coated with thermal barrier coatings (with masking of the holes) on an internal periphery surface of a wall.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Clingman to use a combustion transition piece as the substrate component to be spray coated on the internal periphery as suggested by the admitted state of the prior art, with an expectation of providing desirable protected surfaces because Clingman teaches to provide thermal barrier coatings on internal periphery of components to be used in a gas turbine engine combustor, and the admitted state of the prior art teaches that a conventional part of a combustor in a gas turbine that contains cooling holes to be treated on an internal periphery with thermal barrier coating is a combustion transition piece.

14. Claims 11 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Clingman as applied to claims 1, 2, 7, 10, 18 and 33 above, and further in view of Kang et al (US 5800695).

Clingman teaches all the features of these claims except that liquid silicone rubber is injected into the cooling hole. Clingman does teach that silicone rubber, in a

viscous spreadable state is applied and forced into the holes, and then dried and hardened to an elastomeric body. Column 2, line 55 through column 3, line 20.

Kang teaches providing maskant into cooling holes in a gas turbine engine component. Column 1, lines 1-10. The maskant is provided into the holes by injecting into the cooling holes in a liquid state, and then cured to harden. Column 2, lines 15-45.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Clingman to inject the maskant in a liquid state as suggested by Kang, with an expectation of providing desirable protected surfaces because Clingman teaches to provide the maskant in a viscous spreadable state (indicating flow) and force it into the holes followed by curing and hardening, and Kang teaches that a conventional desirable way to force maskant into cooling holes is to provide it in a liquid form and then cure to harden.

15. The Examiner notes that Clingman was provided on the PTO-892 of January 4, 2008.

### *Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Katherine A. Bareford whose telephone number is (571) 272-1413. The examiner can normally be reached on M-F(6:00-3:30) First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy H. Meeks can be reached on (571) 272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Katherine A. Bareford/  
Primary Examiner, Art Unit 1792